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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/520,109

01/03/2005

Norbert Breuer

R.303095

9548

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09/20/2006

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EXAMINER

TRAN, DIEM T

ART UNIT

PAPER NUMBER

3748

DATE MAILED: 09/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/520,109	BREUER ET AL.	
	Examiner	Art Unit	
	Diem Tran	3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 20-39 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 20-39 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

The preliminary amendment filed on 1/3/05 has been acknowledged. In this amendment, claims 1-19 have been canceled and 20-39 have been added. Overall, claims 20-39 are pending in this application.

Claim Objections

Claim 20 is objected to because of the following informalities:

-In claim 20, --at least one of – should be inserted after “wherein” and “and/or” should be changed to --and--. Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 20-21, 39 are rejected under 35 U.S.C. 102(b) as being anticipated by Sikich (US Patent 3,979,193).

Regarding claims 20, 21, 39, Sikich discloses a method for cleaning the exhaust gas stream in the exhaust gas line of an internal combustion diesel engine, of particles such as soot, the exhaust gas stream being enriched with ozone, the method comprising the steps of effecting a continuous enrichment of the exhaust gas stream with ozone such that particles that are present are to a great extent oxidized even during the flow through the exhaust gas line, determining the

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concentration of the ozone essentially as a function of the particle stream, and selecting the concentration of the ozone in particular such that the remaining particle content of the exhaust gas stream does not exceed a predetermined limit value (see col. 3, lines 4-11, 28-34, col. 5, lines 20-25, 51-56).

Claims 30-38 are rejected under 35 U.S.C. 102(b) as being anticipated by Caren et al. (US Patent 6,321,531).

Regarding claims 30, 36-38, Caren discloses a method for operating an apparatus for cleaning exhaust gases in an exhaust gas line of an internal combustion engine, in which a gas stream enriched with ozone is generated in an ozone source, the method comprising rinsing the exhaust gas line at least partially with the gas enriched with ozone before the engine is started (see col. 15, lines 28-34).

Regarding claim 31, Caren further discloses that the gas stream is introduced into the exhaust gas line upstream of an oxidizing catalytic converter (13) whereby at least the oxidizing catalytic converter is rinsed with the ozone- enriched gas before the engine is started (see col. 15, lines 42-49, col. 16, lines 5-13).

Regarding claim 32, Caren further discloses that controlling the combustion in the engine immediately after the engine is started, such that the exhaust gases still contain combustible hydrocarbons (see col. 22, lines 4-8).

Regarding claims 33-35, Caren further discloses that effecting an enrichment, in particular a degressive enrichment, of the exhaust gas stream with ozone generated by the ozone

source until the operating temperature of the oxidizing catalytic converter is reached (see col. 15, lines 18-24, 28-49).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 22 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sikich (US patent 3,979,193) in view of Caren et al. (US Patent 6,321,531).

Regarding claim 22, Sikich discloses all the claimed limitations as discussed in claim above, however, fails to disclose generating the ozone in a reaction chamber outside the exhaust gas stream. Caren teaches that ozone is generated in a reaction chamber (23) outside the exhaust gas stream and is supplied to the exhaust gas (see Figure 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Caren in the Sikich apparatus, since the use thereof would have provided an ozone amount necessary to purify harmful emissions in an exhaust gas stream.

Claims 23-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rohde et al. (US Patent 3,771,921) in view of Caren et al. (US Patent 6,321,531).

Regarding claim 23, Rohde discloses a method for purging a catalytic converter in an apparatus for cleaning the exhaust gas from an internal combustion engine, having an ozone source for enriching the exhaust gas stream in an exhaust gas line upstream of the catalytic converter, the method comprising the steps of generating ozone in the ozone source and introducing the ozone into the exhaust gas line in the region of the catalytic converter after the engine has been shut off (see col. 5, lines 36-51); however, fails to disclose that said catalytic converter is a particulate filter and ozone is used instead of secondary air. Caren teaches that ozone is supplied to the exhaust gas upstream of the catalyst device to raise the temperature of the catalyst device (see col. 15, lines 18-21, 39-45).

It is well known for one having ordinary skill in the art to realize that the catalytic converter in Rohde is a NO_x trap or particulate filter since air is supplied to the exhaust gas to purge the catalytic converter (17) after engine shut down to restore the catalytic converter trapping capability.

It would have been obvious to one having ordinary skill in the art at the time the invention was made, to have utilized the teaching of Caren in the Rohde apparatus, since the use thereof would have provided an effective means for supplying an oxidizing gas to raise the exhaust gas temperature.

Regarding claim 24, Rohde discloses all the claimed limitations as discussed in claim 23 above, however, fails to disclose increasing the ozone concentration on or in the particle filter until the self-ignition of the deposited particles.

It would be obvious for one having ordinary skill in the art to realize that during purging the catalytic device, ozone is continuously injected so that the temperature of the device is raised to a predetermined temperature wherein the trapped NO_x can be released or the trapped particulate matter can be burned; therefore, Rohde discloses increasing the ozone concentration on or in the particle filter until the self-ignition of the deposited particles.

Regarding claims 25, 26, Caren further teaches using a blower to generate an ozone-enriched gas flow through the catalyst device (see col. 22, lines 4-12).

Regarding claims 27-29, Rohde discloses all the claimed limitations as discussed in claim 23 above, however, fails to disclose regulating the ozone delivery on the basis of the temperature of the particle filter.

It would be obvious for one having ordinary skill in the art to realize that Rohde reduces a rate of ozone delivery to the filter to reduce a filter temperature if the filter temperature is increased too high to prevent the filter from being damaged or melted.

Conclusion

Any inquiry concerning this communication from the examiner should be directed to Examiner Diem Tran whose telephone number is (571) 272-4866. The examiner can normally be reached on Monday -Friday from 8:00 a.m.- 5:30p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion, can be reached on (571) 272-4859. The fax number for this group is (571) 273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 800-786-9199 (toll-free).

DT



Diem Tran
Patent Examiner
Art unit 3748



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